

REMARKS

Claims 1-15 were examined in the Office Action mailed January 24, 2006.

Claims 1-15 stand rejected under 35 U.S.C. § 102(b) as anticipated by U. S. Patent No. 5,806,304 to Price, *et al.* ("Price").

Claims 1-15 stand rejected under 35 U.S.C. § 102(b) as anticipated by U. S. Patent No. 5,806,304 to Price, *et al.* ("Price") and as anticipated by U. S. Patent No. 5,353,590 to Pettit, *et al.* ("Pettit").

The Applicant has amended claims 1, 7, 10-11 and 13-15 in order to conform the claims to U.S. practice.

1. The Claims Are Patentable Over Price. The Applicant respectfully traverses the rejection of claims 1-15 as anticipated by Price on the grounds this reference does not disclose all the features of the present invention recited in the independent claims 1, 7 and 15.

Pending claim 1 recites, *inter alia*, (i) a motor vehicle "with a cryotank" (a unique, sophisticated container for storage of extraordinarily-low temperature materials, such as liquid hydrogen, natural gas, or the like), (ii) the introduction of boil-off gas from the cryotank "through a nozzle of an ejector pump" and into a duct providing air to mix with the boil-off gas, followed by (iii) feeding the boil-off gas/air mixture into the vehicle's exhaust system near the exhaust catalyst.

Claim 1; Specification at, *e.g.*, ¶ [0003].

The Applicant notes that one of ordinary skill in the art would recognize that the complex structure and supporting systems which comprise a storage

system for cryogenic liquefied gases are not “simply” exchangeable with conventional gas tanks, and thus it would not be obvious to one of ordinary skill to assume applicability of a system associated with a conventional gas tank to a highly-demanding cryogenic application (put another way, one of ordinary skill would recognize that this is not a situation in which “a tank is a tank”).

Price: Price discloses a method and apparatus for heating a conventional vehicle’s exhaust catalyst, using relatively high-temperature fuel from a conventional vehicle gas tank as the heat source. *See, e.g.*, Price at 1:19-21 (fuel in tank can “reach a temperature of 55°C or more” (*i.e.*, more than 150F)); at 11:1-9 (where fuel is heated to be vaporized to supply the Price exhaust catalyst heater, “fractions having a boiling temperature of up to about 100°C to 120°C, or even higher”). There is no disclosure or suggestion in Price of the claimed “motor vehicle with a cryotank,” and thus neither an explicit or implicit disclosure of the cryogenic fuel boil-off management. Price therefore fails to disclose or suggest the pending claims’ cryogenic fuel tank and related apparatus.

Price also fails to teach or suggest the claimed ejector pump arrangements. The January 24, 2006 Office Action states that Price element 2 discloses the claimed nozzle, element 3 discloses the claimed ejector pump, and that the pump draws at least one of environmental air and scavenging air from the fuel tank to be discharged into the vehicle exhaust. Review of this reference, however, reveals that there is no teaching or suggestion of an ejector pump (*i.e.*, a pump utilizing nozzle flow (in the present case, flow of boil-off gas) to

accelerate a surrounding fluid (in this application, air, as illustrated, for example, in Fig. 1 (nozzle 1 in conduit 2)).

As a first matter, there is no discussion of *any* nozzle in this reference. The cited element 2 is not an ejector pump nozzle, it is identified as a “flame arrester” – *i.e.*, a device which *inhibits* flow to prevent flame propagation, not a nozzle which *accelerates* fluid flow. Price at 7:35-37.

As for the identified pump, not only is there nothing in Price which provides any indication as to what sort of pump element 3 may be, one of ordinary skill would recognize that this is highly unlikely be an ejector pump. An ejector pump, at a minimum, takes two flow sources – one flowing at a high rate through a nozzle, and one fed in along side the nozzle to be accelerated by the nozzle flow – to form a single output flow. Price Fig. 1 discloses a single source into the pump 3, which is inconsistent with the use of an ejector pump. Indeed, rather than teaching the *claimed* arrangement, in which a boil-off gas supplied to the ejector pump draws in a *separate* air source, Price teaches drawing a single air/gasoline fume stream into the pump 3 from the vehicle’s charcoal canister. Thus Price fails to disclose or suggest claim 1’s ejector pump arrangements wherein “the boil-off gas is introduced through a nozzle of an ejector pump into a gas duct which draws environmental air and/or scavenging air from the fuel supply system of a motor vehicle.”

Pettit: The Pettit reference similarly fails to disclose or suggest all of the features of the present invention recited in the pending claims.

Pettit discloses a conventional fuel tank supplying “through operation of a conventional fuel vapor generating means,” a fuel vapor to a burner 16. Pettit at 3:31; 3:43-47. Combustion air is *force-fed* into the burner 16 by a blower 32. *Id.* at 2:67-68. Pettit, like Price, thus also fails to disclose or suggest any aspect of management of a cryogenic fuel system, including boil-off management, and fails to disclose or suggest an ejector nozzle arrangement in which a boil-off gas provides the energy to draw in air for subsequent combustion within an exhaust tract (“wherein the boil-off gas is introduced through a nozzle of an ejector pump into a gas duct which draws environmental air and/or scavenging air from the fuel supply system of a motor vehicle” and “the gas duct discharges near an exhaust gas catalyzer into the internal combustion engine’s exhaust system”).

Finally, the Applicant respectfully submits that it would not be obvious to apply Price’s or Pettit’s teachings for use in the management of cryogenic fuel systems. M.P.E.P. § 2143 states that to establish a *prima facie* case of obviousness there must be some suggestion or motivation to modify the reference. However, because Price and Pettit are silent on the use of cryogenic liquefied fuels, and in particular contain no teachings or suggestions with respect to the use of ejector pumps, let alone the use of such pumps with cryogenic gases, the Applicant respectfully submits that – absent hindsight knowledge of the present invention – one of ordinary skill would not have looked to these conventional fuel references, or found any suggestion or motivation, for the development of the invention recited in the pending claims.

CONCLUSION

In view of the foregoing amendments and remarks, the Applicant respectfully submits that claims 1-15 are in allowable form. Early and favorable consideration and issuance of a Notice of Allowance for these claims is respectfully requested.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #080437.53354US).

Respectfully submitted,

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